Remarks

We note with appreciation the allowance of Claims 6-9 and 17-22.

We respectfully submit that the solicited claims are not anticipated by Paff et al. (U.S. Patent No. 5,801,770). We respectfully note that the claimed invention includes a motor current process and a phase control process to generate current and phase signals to control a stepper motor. In the prior art, stepper motors have had disadvantage in that they may not have provided as smooth a control as linearly controlled DC servo motors. The claimed invention solves this problem.

As noted in the Specification beginning on page 9, the motor control logic controls the stepper motors with a method that provides smoother movement then would be provided by fully energizing each phase motor in sequence. The motor control logic provides for each phase of the motors to be slowly de-energized as the next sequential phase is gradually energized. This causes the motor armatures to be magnetically drawn to a point between the two magnetic phase poles of the motor. This point is determined by the intensities of the two electromagnetic poles. This technique is referred to as micro-stepping.

By using a non-linear algorithm to energize and de-energize the motor poles, the motor movement can be made to be substantially linear. The non-linear algorithm also has the effect of making the motor torque uniform between micro-steps.

In sharp contrast, the camera control system disclosed in Paff uses linearly controlled DC servo motors to control the camera movement, and not stepper motors as in the claimed invention.

This is clear from the description of control algorithms used by the DSP in Paff to accomplish the closed loop motion control of the drive motors (Cols. 7 and 8). In Paff, a PWM signal is used to directly drive the DC servo motor, and it is the direct control of that signal that is used to linearly control the motor (e.g., "...Change between actual velocities occur at the presently specified **linear** command acceleration..." Col. 7, lines 26-27).

This is not the claimed invention. In the claimed invention, current and phase signals are used to control a stepper motor.

Accordingly, we respectfully request that the rejection under 35 U.S.C. 102(b) be withdrawn.

For the reasons set forth above, we respectfully submit that the solicited claims are in proper condition for allowance, which action is respectfully requested.

Respectfully submitted,

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